

## Variations of Robin capacity and applications

Nasyrov S.

*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

---

### Abstract

We obtain some estimates for the distortions of the moduli of quadrilaterals, the reduced moduli, and Robin capacities depending on the variation of the boundary of a domain. We show that for sufficiently smooth variations of the boundary the corresponding variations of the moduli and capacities are proportional to the area of the variable part of the domain in some extremal metric. We apply these results to studying the generalized Lavrent'ev problem of finding the shape of an infinitely thin airfoil of given length with the maximal aerodynamical lift under some restriction on the curvature of the airfoil. © 2008 Pleiades Publishing, Ltd.

<http://dx.doi.org/10.1007/s11202-008-0088-7>

---

### Keywords

Aerodynamical lift, Extremal length of a family of curves, Moduli of quadrilaterals, Robin capacity